Space Weather Forecast

Issued on Thursday, 01 August 2024 at 13:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate flares expected, chance of Strong flares. Potential further Coronal Mass Ejection glancing blows Days 1-2 (01-02 Aug), risk of Minor Storms. Chance of exceeding S1/Minor Radiation Storm threshold.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is Moderate, with occasional Moderate-class flares observed from across the disc in the last 24 hours. We have a highly active disc with thirteen sunspot regions. Several regions in the southwest disc are in a cluster close together. A further region west of centre disc persists with marked magnetic complexity. A region in the southeast is now also revealing magnetic complexity. Three further regions near the east limb are difficult to assess with the current viewing angle.

Currently none of the Coronal Mass Ejections (CMEs) seen in imagery in the last 24 hours are thought to be significantly Earth directed.

Solar Wind / Geomagnetic Activity: The solar wind has seen a CME arrivals at 31/1347 UTC. Wind speeds were slightly elevated levels, with a slight uptick after each CME arrival. The Interplanetary Magnetic Field was weak to moderate and briefly strong after the CME arrival. The north-south component was weakly positive until the CME arrival, after which it started to vary moderately. Geomagnetic activity was Unsettled to Active, with a Minor Storm (Kp5) interval 31/1800-2100 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to High activity forecast to continue, with occasional Moderate class flares expected and a chance of isolated Strong flares.

Solar Wind /Geomagnetic Activity: Further CME arrivals are possible on Days 1-2 (01-02 Aug), chiefly on Day 1. They are both low confidence, but glancing blows are possible on both days. Furthermore, due to the number of coincident CMEs, further arrivals cannot be ruled out through the period.

No coronal hole fast wind enhancements are expected, with CME arrivals expected to be the main factor of interest during this period. Geomagnetic activity is expected to be Unsettled to Active with a chance of minor Storms. In the absence of further CME influence, activity is likely to become mostly Quiet later in the period.

Energetic Particles / Solar Radiation: Solar radiation is currently at background levels, but with a chance of exceeding the S1/Minor Solar Radiation Storm level in response to larger flares

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from the western disc.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	40	20	5	5
Strong	G3	No	5	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	90	90	90	80
Very Active	R3 to R5 X	No	25	25	25	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	25	25	25	25
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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